

REMARKS

Applicant respectfully requests reconsideration and allowance of claims 1-2, 4-17, and 19-41, which are pending and stand rejected in the above-identified application. Applicant has amended claim 1 herein. No new matter is added by the amendments. Support for the amendments may be found in at least FIGS. 1-14; the abstract; and paragraph [00105] of the specification as originally filed. In view of the following discussion, Applicant submits that all pending claims are in condition for allowance.

I. Rejection of Claims 1, 2, 4, 9, 17 and 26 under 35 U.S.C. §103(a):

At numbered part 1 of the Office Action, the Examiner has rejected claims 1, 2, 4, 9, 17, and 26 under 35 U.S.C. §103(a) as being unpatentable over Kato (U.S. Pat. No. 5,682,203) in view of Maruyama (U.S. 20060006438). In view of the amendments herein, Applicant respectfully submits that the Examiner's claim rejection has been overcome.

Amended independent claim 1 recites, in part, "regularly disposed optical channels having at least one microlens and at least one detector that generate an image without employing additional image generating optics... the at least one detector is used with a sensitivity such that the at least one detector has a pitch that is larger than an *active* surface area thereof".

Kato in view of Maruyama do not teach or suggest such claim aspects.

Kato relates to a solid-state image sensing device including a plurality of photo cells provided on a substrate and a plurality of micro condenser members each provided on a corresponding photo cell. Accordingly, Kato discloses that the interval at which the micro condenser members are arranged at a central portion of the substrate differs from the interval at which the micro condenser members are arranged at a peripheral portion. (*See*, Kato Abstract). However, the image sensing device of Kato requires an additional image generating optics in order to generate images. For example, Kato discloses a collective lens such as a photo-taking lens 4 in order to generate images (*See*, Kato Fig. 2 and related description at col. 5 lines 15-31). Therefore,

Kato discloses a photo taking system, the thickness of which corresponds to the focal length of the collective lens 4. In contrast, the claimed subject matter relates to a flat image recognition system which has much less thickness as compared to the system disclosed by Kato. This facilitates employing the image recognition system recited in the claims as an integral component in a large number of application, such as, small appliances like clocks, PDSs, mobile phones, spectacles etc. (*See*, applicant's specification as filed paragraph [0062]).

Furthermore, applicant notes the Examiner's concession that Kato does not disclose the detector with a pitch as detailed in independent claim 1. However, at the same portion, it is erroneously contended that Maruyama discloses a detector that has a pitch that is larger than an *active* surface area thereof. In accordance with Figs. 3 and 7 of Maruyama, the sensor photoreceptive portion 110A of the photodiode 110 included in a pixel has a readout gate 110B for reading out signal charges of the sensor photoreceptive portion 110A in the lower left corner and has a rectangular form missing one corner. Thus, except in the portion of the inactive surface 110B wherein the sensitivity of pixels is lower than the sensitivity of pixels in the remaining part, the active surface 110A has the same width and length as the surface of the detector (i.e. photodiode 110/microlens 260). (*See*, Maruyama paragraphs [0051-0052]).

In contrast, at least one embodiment of claim 1 covers a device having at least a microlens and at least one detector wherein a pitch of the detector is larger than an active surface area of the detector. For example, a detector may have a pitch, p , that is larger than the active surface area of the detector (*e.g.*, as indicated by the size, a , of the scannable micro image of the detector as seen in FIG. 1 and discussed in at least [0109] of the specification). Thus, the detector has a sensitivity defined by the relationship of the pitch, p , being larger than the active surface area (*e.g.*, the size, a). (*See*, FIGS. 1-14; the abstract; and paragraphs [0013-016] and [0098-0100] of the specification.)

In view of at least the foregoing, it is submitted that a combination of Kato and Maruyama does not teach or suggest all aspects of independent claim 1. Hence, this rejection should be withdrawn with respect to this claim and all claims depending therefrom.

II. Rejection of Claim 5 under 35 U.S.C. §103(a):

At numbered part 2 of the subject Final Office Action, claim 5 is rejected under 35 U.S.C. §103(a) as being unpatentable over Kato in view Maruyama and further in view of Beeson et al. (U.S. Pat. No. 5,521,725, hereinafter “Beeson”). Withdrawal of this rejection is requested for at least the following reasons. The cited art, alone or in combination, does not teach or suggest all aspects of independent claim 1 from which the subject claim depends.

The reasons for patentability of claim 1 over Kato and Maruyama as discussed above apply with equal weight here. Beeson relates to an optical illumination system comprising a waveguide that accepts light generated by a diffuse light source and transmits the light via total internal reflection. However, it fails to make up for the aforementioned deficiency of Kato and Maruyama with respect to independent claim 1 as it fails to teach or suggest a detector as recited in claim 1. Therefore, this rejection should be withdrawn with respect to claim 5 which depends therefrom.

III. Rejection of Claims 6, 7, and 20-23 under 35 U.S.C. §103(a):

At numbered part 3 of the subject Final Office Action, claims 6, 7, and 20-23 are rejected under 35 U.S.C. §103(a) as being unpatentable over Kato in view Maruyama and further in view Applicant's Admitted Prior Art (AAPA). Withdrawal of this rejection is requested for at least the following reasons. The cited art, alone or in combination, does not teach or suggest all aspects of independent claim 1 from which the subject claims depend.

The reasons for patentability of claim 1 over Kato and Maruyama as discussed above apply with equal weight here. AAPA fails to make up for the aforementioned deficiency of Kato and Maruyama with respect to independent claim 1 as it fails to teach or suggest a detector as recited in claim 1. Therefore, this rejection should be withdrawn with respect to claims 6, 7 and 20-23 which depend therefrom.

IV. Rejection of Claims 8, 11-13, 19 and 27-30 under 35 U.S.C. §103(a):

At numbered part 4 of the subject Final Office Action, claims 8, 11-13, 19 and 27-30 are rejected under 35 U.S.C. §103(a) as being unpatentable over Kato in view Maruyama and further in view Miyatake et al. (U.S. 20060072029). Withdrawal of this rejection is requested for at least the following reasons. The cited art, alone or in combination, does not teach or suggest all aspects of independent claim 1 from which the subject claims depend.

The reasons for patentability of claim 1 over Kato and Maruyama as discussed above apply with equal weight here. Miyatake et al. relates to an image input apparatus which reconfigures a single reconfigured image from a plurality of low-resolution, object reduced images formed in a specified region on the light detecting element by the micro-lens array. However, it fails to make up for the aforementioned deficiency of Kato and Maruyama with respect to independent claim 1 as it fails to teach or suggest a detector as recited in claim 1. Therefore, this rejection should be withdrawn with respect to claims 8, 11-13, 19 and 27-30 which depend therefrom.

V. Rejection of Claim 10 under 35 U.S.C. §103(a):

At numbered part 5 of the subject Final Office Action, claim 10 is rejected under 35 U.S.C. §103(a) as being unpatentable over Kato in view Maruyama and further in view of Meyers (U.S. 6,141,048). Withdrawal of this rejection is requested for at least the following reasons. The cited art, alone or in combination, does not teach or suggest all aspects of independent claim 1 from which the subject claim depends.

The reasons for patentability of claim 1 over Kato and Maruyama as discussed above apply with equal weight here. Meyers relates to an image capture device incorporates an array of photodetectors, utilizing an integral current mirror formed at each photodetector location to increase photodetector current output. However, it fails to make up for the aforementioned deficiency of Kato and Maruyama with respect to independent claim 1 as it fails to teach or suggest a detector as recited in claim 1. Therefore, this rejection should be withdrawn with respect to claim 10 which depends therefrom.

VI. Rejection of Claim 14 under 35 U.S.C. §103(a):

At numbered part 6 of the subject Final Office Action, claim 14 is rejected under 35 U.S.C. §103(a) as being unpatentable over Kato in view Maruyama and further in view of Takayama (U.S. 20050041134). Withdrawal of this rejection is requested for at least the following reasons. The cited art, alone or in combination, does not teach or suggest all aspects of independent claim 1 from which the subject claim depends.

The reasons for patentability of claim 1 over Kato and Maruyama as discussed above apply with equal weight here. Takayama relates to a solid-state image pickup apparatus that includes a two dimensionally arranged light receiving pixel group having light receiving pixels to convert photoelectrically incident light and a microlens array to be two-dimensionally arranged to correspond in position to the light receiving pixels. However, it fails to make up for the aforementioned deficiency of Kato and Maruyama with respect to independent claim 1 as it fails to teach or suggest a detector as recited in claim 1. Therefore, this rejection should be withdrawn with respect to claim 14 which depends therefrom.

VII. Rejection of Claim 16 under 35 U.S.C. §103(a):

At numbered part 7 of the subject Final Office Action, claim 16 is rejected under 35 U.S.C. §103(a) as being unpatentable over Kato in view Maruyama and further in view of Miyatake et al. and Takayama. Withdrawal of this rejection is requested for at least the following reasons. The cited art, alone or in combination, does not teach or suggest all aspects of independent claim 1 from which the subject claim depends.

The reasons for patentability of claim 1 over Kato and Maruyama as discussed above apply with equal weight here. Furthermore, as discussed *supra*, Miyatake et al. and Takayama, fail to make up for the aforementioned deficiency of Kato and Maruyama with respect to independent

claim 1 as it fails to teach or suggest a detector as recited in claim 1. Therefore, this rejection should be withdrawn with respect to claim 16 which depends therefrom.

VIII. Rejection of Claim 24 under 35 U.S.C. §103(a):

At numbered part 8 of the subject Final Office Action, claim 24 is rejected under 35 U.S.C. §103(a) as being unpatentable over Kato and Maruyama in view of Miyatake and further in view of Nagaoka et al. (U.S. 20040218283). Withdrawal of this rejection is requested for at least the following reasons. The cited art, alone or in combination, does not teach or suggest all aspects of independent claim 1 from which the subject claim depends.

The reasons for patentability of claim 1 over Kato, Maruyama and Miyatake et al. as discussed above apply with equal weight here. Nagaoka et al. relates a variable optical element is formed by a first liquid member, a second liquid member which is insoluble in the first liquid member, a container which contains the first liquid member and the second liquid member, an index for positioning the variable optical element according to a predetermined reference. However, it fails to make up for the aforementioned deficiency of Kato, Maruyama and Miyatake et al. with respect to independent claim 1 as it fails to teach or suggest a detector as recited in claim 1. Therefore, this rejection should be withdrawn with respect to claim 24 which depends therefrom.

IX. Rejection of Claim 25 under 35 U.S.C. §103(a):

At numbered part 9 of the subject Final Office Action, claim 25 is rejected under 35 U.S.C. §103(a) as being unpatentable over Kato and Maruyama in view of Miyatake and further in view of Campbell et al. (U.S. 7,196,728). Withdrawal of this rejection is requested for at least the following reasons. The cited art, alone or in combination, does not teach or suggest all aspects of independent claim 1 from which the subject claim depends.

The reasons for patentability of claim 1 over Kato, Maruyama and Miyatake et al. as discussed above apply with equal weight here. Nagaoka et al. relates a screen that includes a

plurality of pinholes distributed in the display along with a plurality of sensors with at least one sensor of the plurality of sensors in alignment with and corresponding with one pinhole of the plurality of pinholes to receive light passing through the pinhole to image a ray of a specific size and a specific direction out from the display. However, it fails to make up for the aforementioned deficiency of Kato, Maruyama and Miyatake et al. with respect to independent claim 1 as it fails to teach or suggest a detector as recited in claim 1. Therefore, this rejection should be withdrawn with respect to claim 25 which depends therefrom.

X. Rejection of Claim 31 under 35 U.S.C. §103(a):

At numbered part 10 of the subject Final Office Action, claim 31 is rejected under 35 U.S.C. §103(a) as being unpatentable over Kato in view Maruyama and Miyatake and further in view of Tangen et al. (U.S. 6,765,617). Withdrawal of this rejection is requested for at least the following reasons. The cited art, alone or in combination, does not teach or suggest all aspects of independent claim 1 from which the subject claim depends.

The reasons for patentability of claim 1 over Kato, Maruyama and Miyatake et al. as discussed above apply with equal weight here. Tangen et al. relates an optoelectronic camera comprises an objective system formed by a number of optical active structures (L), particularly refractive structures in the form of microlenses or lenslets provided in an array. However, it fails to make up for the aforementioned deficiency of Kato, Maruyama and Miyatake et al. with respect to independent claim 1 as it fails to teach or suggest a detector as recited in claim 1. Therefore, this rejection should be withdrawn with respect to claim 31 which depends therefrom.

XI. Rejection of Claim 32 under 35 U.S.C. §103(a):

At numbered part 11 of the subject Final Office Action, claim 32 is rejected under 35 U.S.C. §103(a) as being unpatentable over Kato in view of Maruyama and Miyatake and further in view of Sasano et al. (U.S. 5,466,926). Withdrawal of this rejection is requested for at least the following

reasons. The cited art, alone or in combination, does not teach or suggest all aspects of independent claim 1 from which the subject claim depends.

The reasons for patentability of claim 1 over Kato, Maruyama and Miyatake et al. as discussed above apply with equal weight here. Sasano et al. relates a colored microlens array which functions as both a color filter array of different color filter layers and transparent microlenses. However, it fails to make up for the aforementioned deficiency of Kato, Maruyama and Miyatake et al. with respect to independent claim 1 as it fails to teach or suggest a detector as recited in claim 1. Therefore, this rejection should be withdrawn with respect to claim 32 which depends therefrom.

XII. Rejection of Claim 33 under 35 U.S.C. §103(a):

At numbered part 12 of the subject Final Office Action, claim 33 is rejected under 35 U.S.C. §103(a) as being unpatentable over Kato in view of Maruyama and Miyatake and further in view of Crosby et al. (U.S. 20040201890). Withdrawal of this rejection is requested for at least the following reasons. The cited art, alone or in combination, does not teach or suggest all aspects of independent claim 1 from which the subject claim depends.

The reasons for patentability of claim 1 over Kato, Maruyama and Miyatake et al. as discussed above apply with equal weight here. Crosby et al. relates to microlenses including wire-grid polarizers and methods for their manufacture. However, it fails to make up for the aforementioned deficiency of Kato, Maruyama and Miyatake et al. with respect to independent claim 1 as it fails to teach or suggest a detector as recited in claim 1. Therefore, this rejection should be withdrawn with respect to claim 33 which depends therefrom.

XIII. Rejection of Claims 34, 35-41 under 35 U.S.C. §103(a):

At numbered parts 13 and 14 of the subject Final Office Action, claims 34 and 35-41 are rejected under 35 U.S.C. §103(a) as being unpatentable over Kato in view of Maruyama and further in view of Mizuguchi et al. (U.S. 5,543,942). Withdrawal of this rejection is requested for at least

the following reasons. The cited art, alone or in combination, does not teach or suggest all aspects of independent claim 1 from which the subject claims depend.

The reasons for patentability of claim 1 over Kato, Maruyama and Miyatake et al. as discussed above apply with equal weight here. Mizuguchi et al. relates discloses an opposed substrate for use in a liquid crystal display element, for example. The opposed substrate is constructed by a transparent substrate, microlenses formed on the substrate, a bonding layer, and cover glass. However, it fails to make up for the aforementioned deficiency of Kato and Maruyama with respect to independent claim 1 as it fails to teach or suggest a detector as recited in claim 1. Therefore, this rejection should be withdrawn with respect to claims 34 and 35-41 which depend therefrom.

Further, Applicant respectfully disagrees with the Examiner's Official Notices taken in the subject rejections. Specifically, Applicant submits that it is not well known to: (i) provide a plurality of similar pixels at a greater spacing in an optical channel in order to increase the light strength without loss of resolution, for the purpose of capturing images in lower light situations (Official Notice at page 17 of the Office Action); (ii) to provide an image recognition system as claimed as an integral component of a clock, notebook, PDA or organizer, mobile telephone, spectacles, clothing items, for the purpose of using a compact camera which won't take up unnecessary space (Official Notice at page 25 of the Office Action); and (iii) provide an image recognition system as claimed for checking and implementing access or use authorization and to integrate in a chip card, credit card, medical technology, monitor tasks in the interior and exterior of vehicles, intelligent cockpits monitoring in the aircraft industry, etc. (Official Notice at page 25 of the Office Action.)

Conclusion:

In view of the foregoing, Applicant submits that the instant claims are in condition for allowance. Early and favorable action is earnestly solicited. The fee for the petition is included herewith. In the event there are any fees due and owing in connection with this matter, please charge same to our Deposit Account No. 11-0223.

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Respectfully submitted,

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